



CASE STUDY

SOLVING A COMPLEX SURFACE WATER QUALITY CHALLENGE

CLIENT: CONFIDENTIAL

LOCATION: UK

HIGHLIGHTS

- Water Quality Investigation
- Geoenvironmental Assessment & Sampling
- Construction Environmental Risk Assessment

THE CHALLENGE

Periods of prolonged winter rainfall at a major grid supply point construction project in southern England led to the unexpected detection of highly alkaline surface waters, with pH levels reaching 12.7 within drainage channels, newly installed drainage infrastructure and utility ducting.

The issue emerged after more than two years of construction activity during which water quality had remained within normal parameters, prompting concern over the source of the elevated pH levels.



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THE SOLUTION

Drawing on experience from similar infrastructure projects, Arthian was appointed to investigate the cause of the contamination and provide evidence-based technical advice. Initial assumptions linked the issue to localised concrete coring works; however, the distribution of the affected waters suggested a wider site-related source.

Working closely with the principal contractor, Arthian designed and implemented a targeted site investigation programme, collecting representative material and water samples from across the development. Detailed laboratory analysis and interpretation of the results enabled our team to identify the underlying cause: the partial dissolution of carbonate-rich minerals within site-won and imported construction materials.

Our investigation concluded that the extensive use of aggregate sourced from a quarry with a naturally high calcium carbonate content was contributing to dissolution and reprecipitation processes, resulting in elevated alkalinity within the site's drainage network. Arthian provided a clear, factual technical assessment that allowed the project team to understand the cause of the issue, support regulatory discussions and inform the development of an appropriate management strategy.

This project demonstrates Arthian's ability to rapidly diagnose complex environmental issues on construction sites, combining geoenvironmental expertise, targeted sampling strategies and robust technical interpretation to help clients manage risk and maintain project delivery.



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